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IMPROVEMENT OF THE CLASS SCHEDULING MANAGEMENT SYSTEM FOR VARIOUS PROGRAMMES IN SPACE UTM

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ABSTRACT - A scheduling system for the education field is being developed based on university institutions' preferences to provide efficient and effective management based on prioritising events, locations, and time. Some scheduling systems will interact with a database to provide more efficient access to and data storage. In higher educational preferences, planning a class scheduling for academic programmes for each semester is not easy due to involves essential elements such as lecturer, student, locations availability and various programmes. Since the class schedule is still a complex issue, these elements need to be considered in preparing a class schedule to make administrative tasks easier and more efficiently. Therefore, this study will implement a standard computerised process of scheduling system to improve the class scheduling system in the academic field. This paper also presented a theoretical concept and a practical method of scheduling system implementation. In addition, a comparative analysis is presented to review the existing scheduling system. The scheduling system's real-time updates will help the data handling accuracy, provide a cost-effective application, and give efficient time management to the academic department. This paper proposed SPACESCHEDULER, a class scheduling system specifically developed for the School of Professional and Continuous Education UTM, to improve the issues of managing various programmes. Based on the results, the proposed scheduling system can be a robust and responsive scheduling system.

Keywords: Scheduling System; educational institutions; computerised system, system development.

1. INTRODUCTION

The field of education is a significant concern in any country. It involves the study of the learning process. Various elements of educational management are contained in each area of education management. This includes theories, methods, and techniques for students' knowledge and skills. The content of Education theory covers the curriculum development of each student. A good curriculum level involves the management of the scheduling in an orderly and tightly controlled manner.

Academic scheduling is an essential aspect of how the academic department presents its mission to students. It defines how long students spend on each subject, with lecturers they would be teaching, and which classroom is involved. It can either improve academic performance or be a source of stress for students and faculty if it is in the poor arrangement path. The education field scheduling is the primary concern on any specific task-execution order that guarantees meeting deadlines (Amurrio *et al.*, 2022). The scheduling system in an educational institution refers to a list of class schedules that show the time of the week in which a particular subject is taught.

The automated scheduling system is desirable to reduce work for administrators and improve the efficiency of related facilities (Squires *et al*., 2022). This context is suitable and relevant to be implemented in the academic scheduling system for the educational field. Many approaches have produced better results on complex scheduling problems (Squires *et al.*, 2022). The educational scheduling process is also difficult, involving several groups such as lecturers, students, and administration staff. This becomes a huge reason why automated scheduling should be adapted. Furthermore, the scheduling process with a scheduling system can lower the cost of cancelling any class or program in the future (Boone *et al*., 2022). This is brought the opportunistic maintenance scheduling for the whole system (Jin *et al.*, 2022). Moreover, an advanced intelligent scheduling method can provide a better system strategy and realise academic class automated scheduling is essential (Hui *et al.*, 2021).

In other words, the class schedule is one of the platforms that will be very helpful to the lecturers in searching for subjects, assigning subjects, learning period time, and the available learning room to students. Therefore, this research will do a comparative analysis based on the existing scheduling system and develop an online scheduling management system (SPACESCHEDULER) for SPACE institutions.

2. RELATED WORK

This study reviewed some related current studies related to the scheduling system. Undoubtedly, this domain of study is one of the interesting topics among researchers and has been implemented in various fields. As presented in Table 1, many research areas to focus on such as medical, computing, engineering, administration, business and education.

Table 1. The related sources

Author	Method	Topic	Advantages	Limitations
(Squires *et al.*, 2022)	Genetic algorithm-based system	Enhance from manual scheduling to algorithm-based systems in medical treatments.	The algorithm aims to optimise the operational efficiency of a medical Centre appointment scheduling, including the capacity to consider a patient priority.	It is implemented in the medical area from the patient's perspective.
(Boone *et al.*, 2022)	Automated appointment reminders system	Scheduling software improves efficiency.	Able to avoid missing health clinic appointment dates.	Implemented in the medical area on health clinic efficiency.
(Yan *et al.*, 2022)	Real-time job scheduling in cloud system	Scheduling in a cloud computing environment.	Propose a deep reinforcement learning approach to handle real-time jobs with less energy consumption in the presence of different real-time cloud workloads.	It is implemented in the business organisation area.
(Chen *et al.*, 2022)	Engineering production scheduling system	Production scheduling to generate optimal model-based system engineering.	To allocate resources to have efficient and low-cost production.	Evaluated on workers scheduling corresponding.
(Hui *et al.*, 2021)	Scheduling strategy of heating system.	Improved related algorithm, which known as fireworks algorithm.	A multi-objective optimisation function had established to minimise the equipment operation cost and heat source cost, and the multi-objective optimisation problem was solved.	Implemented in airport energy station dispatching scheme.
(Amurrio *et al.*, 2022)	Hierarchically scheduled time-partitioned real-time systems.	The complexity of industrial embedded systems.	The industrial railway use case had been evaluated in different general synthetic scenarios to provide a view on behaving in a broader range of system configurations.	Implemented in industrial embedded systems represents the area.

(N. Asma *et al.*, 2021)	**A class scheduling system to manage university courses with requirements that can select, terminate, generate reports by administrators and give authority to administrators and instructors that request the information.**	**The study on a database for users worldwide for accessible access stores information or data to collect views, reports and queries.**	**Overcome the constraints and create solutions by developing an automated scheduling system.**	**It was implemented in university courses.**
(Pavel, 2019)	Use the PHP programming language with the database management system MySQL for web applications.	To improve Scheduling Class System and explain the accessibility with the database in the easiest way.	The Automated Class Scheduling system gives more exceptional performance and can solve primary problems encountered during the preparation of the class schedule.	It was implemented in academic class in a university course.
(Ahmed Wasfy, 2007)	University Class Scheduling using advanced ILP techniques	To optimize the performance criteria and distribute the courses fairly to classrooms capacities to course enrolments.	The proposed model is tractable for reasonable-sized university class scheduling problems.	Limited to the class scheduling in university level.
(Janewit Nakasuwan, 1999)	Class scheduling using linear programming	To improve the class scheduling timetables	Fit all courses to meet different time intervals and optimize operating cost in Sirindhorn International Institute of Technology.	It was implemented in academic class in a university course.

The scheduling system context of the study is suitable for implementation in any area with a complex scheduled environment. The medical field implemented the scheduling system, such as patient records and health clinic efficiency (Boone *et al*., 2022; Squires *et al*., 2022). The business sector implemented scheduling system in a cloud computing environment (Yan *et al*., 2022). Moreover, the engineering field, implemented the scheduling system for allocating resources to have efficient and low-cost production in evaluated workers scheduling corresponding (Chen *et al*., 2022).

The heating systems use scheduling strategy for the airport energy station dispatching scheme (Hui *et al*., 2021). The scheduling approach is suitable for implementation even in a big and complex context region.

As this study proposes implementing the scheduling system in higher educational institutions, SPACE, the previous research that implemented it in the class scheduling system, has been studied. According to Abdullah & Hussan (2019), they created a class scheduling system to manage university courses with requirements that can select, terminate, generate reports by administrators, and given authority to administrators and instructors who request the information. However, class scheduling development is still a complex issue. To prepare the class schedule, it considers several elements of its objectives, constraints and solutions. In comparison to the manual scheduling system, the automated class scheduling system was developed to overcome the limitations of the manual scheduling system, which

prefers to be up to date with technological advancement and the use of reducing the load of gathering information and data about students, classes, departments, and arranging timetables. Therefore, to overcome the constraints and create solutions, the researchers propose a method of developing a scheduling system by using the PHP programming language with the database management system MySQL for web applications to execute a solution on a web-based design platform for its automatic scheduling system approach (N. Asma *et al*., 2021). The development of the scheduling system can be done by using a variety of programming languages, including HTML, JavaScript, PHP and many more. The development research by Pavel (2019) was conducted using the PHP programming language with the database management system MySQL for web applications. Another two researchers (A. Wasfy, 2007; J. Nakasuwan, 1999) also use class scheduling in academic purpose to optimize the performance criteria and to improve scheduling timetables.

The previous scheduling system faces a few constraints: manual scheduling system and inability to accommodate all lecturer and student's availability from the multiple programmes. This will also affect students' and lecturers' early preparation for their class time. Moreover, that system gives the administrator a hard time because it involves many works for short period allocation. The automated scheduling system for SPACE UTM, known as SPACESCHEDULER, firstly enhances the efficiency of time management from the previous system based on the manual operation done by the administrative staff.

Secondly, the SPACESCHEDULER allows the administrative staff and academic coordinator to access the updated class timetable based on the availability time provided and avoid clashing time.

The SPACESCHEDULER can also search the available classroom for the lecturers and students. All the information of class scheduled is available for print. As the academic timetable are involved lecturers, students, courses and locations in a complex view, the concept of an up-to-date SPACESCHEDULER system is necessary to be adapted in SPACE.

3. METHODOLOGY FRAMEWORK

In order to prepare the class schedule, it considers several elements in terms of its objectives, constraints, and solutions. In comparison to the manual scheduling system, the automated class scheduling system was developed to overcome the limitations of the manual scheduling system, which prefers to be up to date with technological advancement and the use of reducing the load of gathering information and data about students, classes, courses, programmes and arranging timetables. Therefore, to overcome the constraints and create solutions, the researchers propose a method of developing a scheduling system by using the Structured Query Language (PHP) programming language with the database management system Structured Query Language (MySQL) for web applications to execute a solution on a web-based design platform for its automatic scheduling system approach. This method was also used to design and test the functionalities in terms of speed, accuracy, data handling stability, security and adaptability in creating class schedules in the class scheduling system, which gives a performance that is more distinctive and can solve primary problems encountered during the preparation of the class schedule. This method was also used to create a base model for future academic management software built by developing a robust web-based application to handle issues with class routine scheduling management, course enrolment, and other functionalities.

The SQL language is used as Database Management System (DBMS) to render better environments and improve automated scheduling system to be flexible, easy to use and improve the scheduling quality with unlimited capabilities by built according to System Development Cycle (SDLC) with eight development phases. Figure 1 present the research framework and Figure 2 present the system flow for this automated class scheduling system.

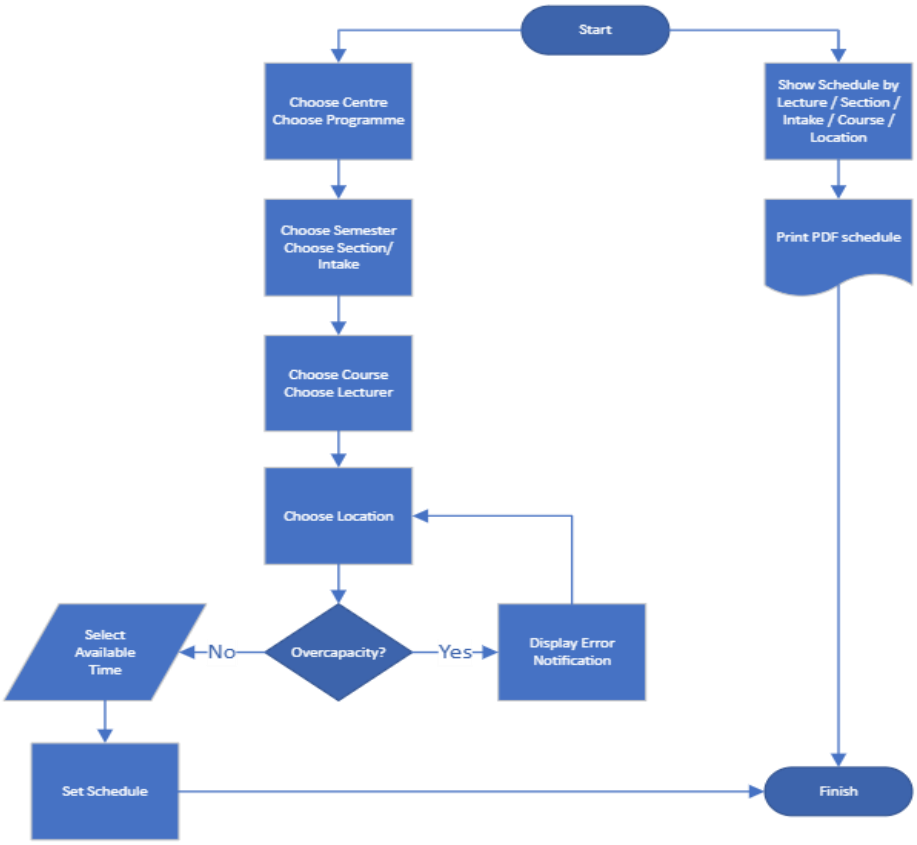


Figure 1. The research framework

As presented in Figure 1, a conceptual framework for developing an online automated scheduling management system (SPACESCHEDULER) to organise and manage classes, lecturers, timetables and university programmes in SPACE is proposed. This framework manages to overcome all the issues that arise. The process began with the problem analysis, reviewing the literature study, and compiling user requirements. Then, the development designed the database architecture and user interface.

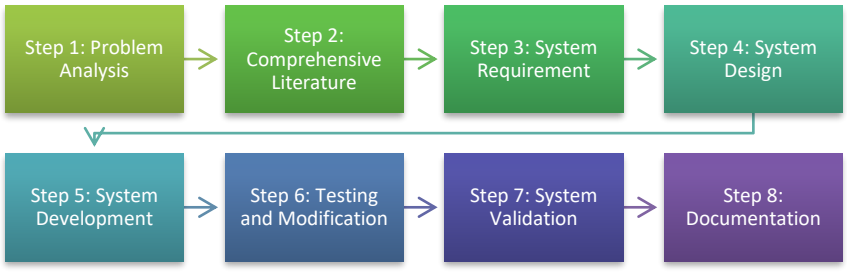


Figure 2. The system flow

Figure 2 explain the system flow was verified, and the system development began with referring to the system design. The user had done the testing, and any modification was made based on the feedback given. Finally, the method must be validated to prove the efficiency and prepare the documentation.

4. SPACESCHEDULER DEVELOPMENT

The database was developed using MySQL from the conceptual framework above, and the system process and interface were designed using HTML programming, PHP scripting, and Java scripting. It was proposed to ensure data handling and synchronisation updates through a server with an internet connection. This web-based automated scheduling system needs to be responsive to manage the collaborative features of the framework effectively. According to a report, a computerised scheduling process integrated with a database is crucial for obtaining a complete user information and courses list. By comparison with the current automated scheduling system, the expansion of usage of functionalities, usability, and interface have been improved significantly with the direct involvement of clients and users.

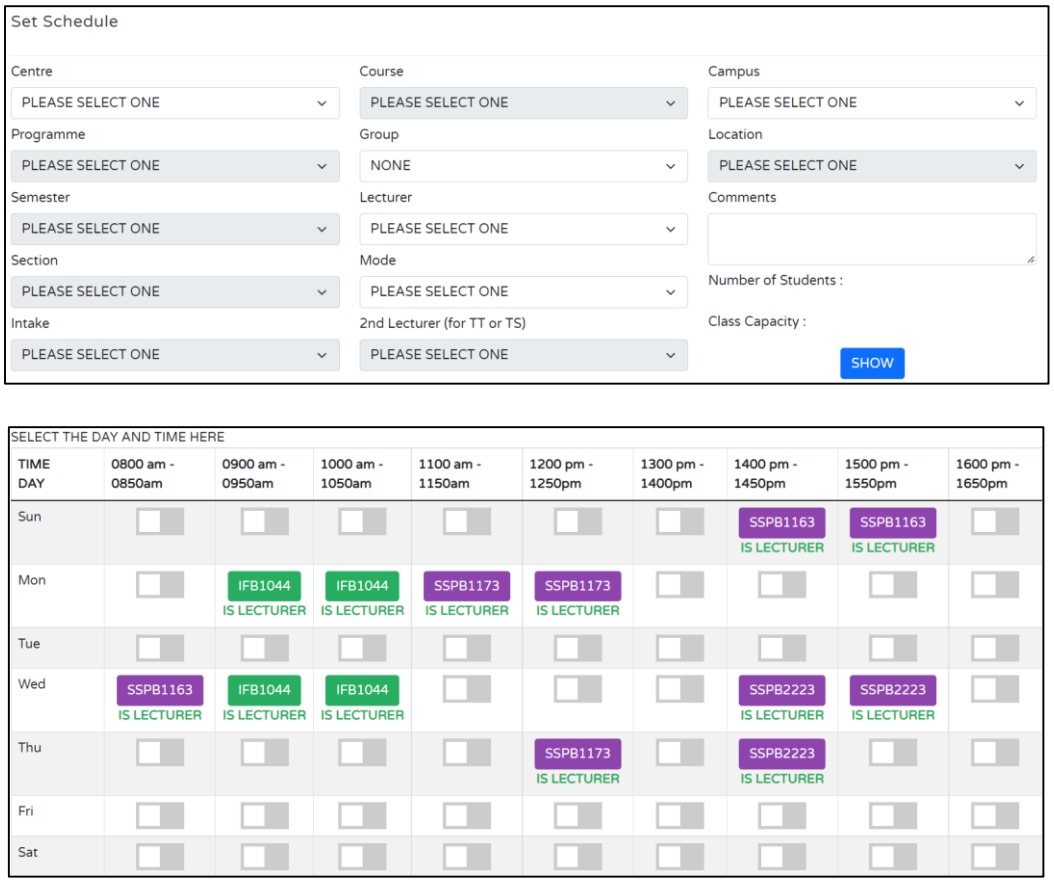
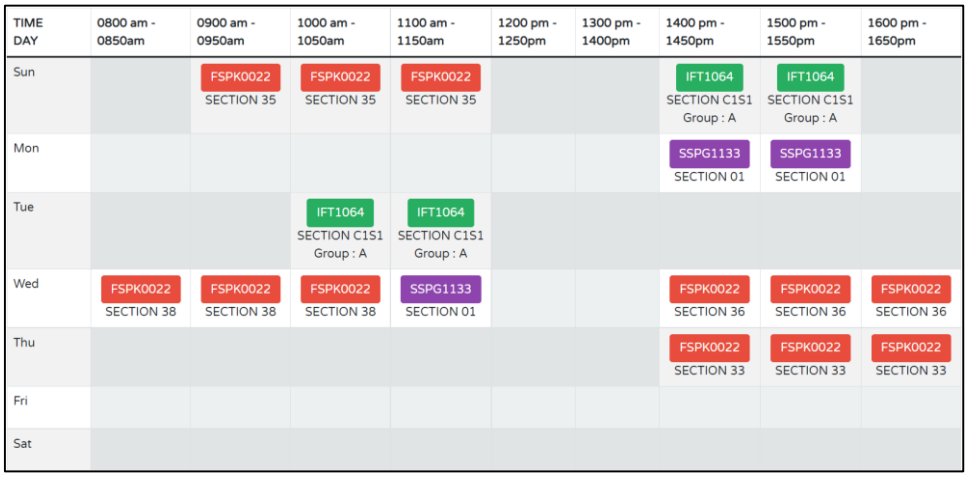


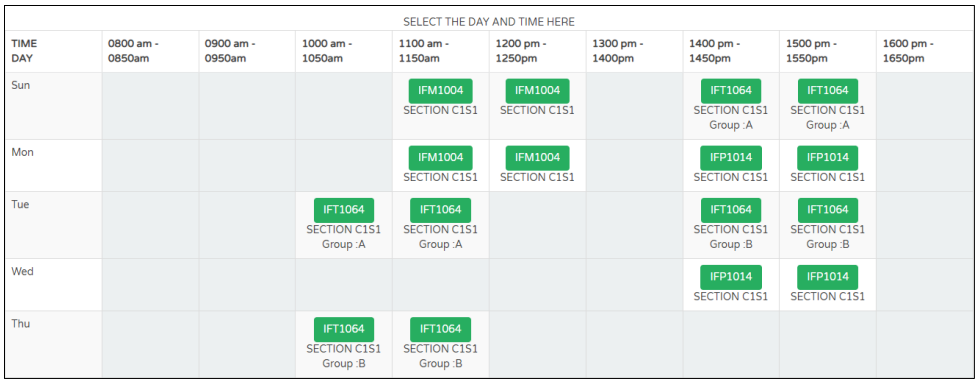
Figure 3. The schedule setting in SPACESCHEDULER

The web-based scheduling system interface was created for an attractive and user-friendly interface. Figure 3 show the primary schedule setting; figure 4(a) and (b) present the interfaces of the lecturer's timetable page and section/intake page from the SPACESCHEDULER system.



TIME / DAY	0800 am - 0850am	0900 am - 0950am	1000 am - 1050am	1100 am - 1150am	1200 pm - 1250pm	1300 pm - 1400pm	1400 pm - 1450pm	1500 pm - 1550pm	1600 pm - 1650pm
Sun		FSPK0022 SECTION 35	FSPK0022 SECTION 35	FSPK0022 SECTION 35			IFT1064 SECTION C1S1 Group : A	IFT1064 SECTION C1S1 Group : A	
Mon							SSPG1133 SECTION 01	SSPG1133 SECTION 01	
Tue			IFT1064 SECTION C1S1 Group : A	IFT1064 SECTION C1S1 Group : A					
Wed	FSPK0022 SECTION 38	FSPK0022 SECTION 38	FSPK0022 SECTION 38	SSPG1133 SECTION 01			FSPK0022 SECTION 36	FSPK0022 SECTION 36	FSPK0022 SECTION 36
Thu							FSPK0022 SECTION 33	FSPK0022 SECTION 33	FSPK0022 SECTION 33
Fri									
Sat									

Figure 4(a). The Lecturer's Timetable Page



SELECT THE DAY AND TIME HERE

TIME / DAY	0800 am - 0850am	0900 am - 0950am	1000 am - 1050am	1100 am - 1150am	1200 pm - 1250pm	1300 pm - 1400pm	1400 pm - 1450pm	1500 pm - 1550pm	1600 pm - 1650pm
Sun				IFM1004 SECTION C1S1	IFM1004 SECTION C1S1		IFT1064 SECTION C1S1 Group :A	IFT1064 SECTION C1S1 Group :A	
Mon				IFM1004 SECTION C1S1	IFM1004 SECTION C1S1		IFP1014 SECTION C1S1	IFP1014 SECTION C1S1	
Tue			IFT1064 SECTION C1S1 Group :A	IFT1064 SECTION C1S1 Group :A			IFT1064 SECTION C1S1 Group :B	IFT1064 SECTION C1S1 Group :B	
Wed							IFP1014 SECTION C1S1	IFP1014 SECTION C1S1	
Thu			IFT1064 SECTION C1S1 Group :B	IFT1064 SECTION C1S1 Group :B					

Figure 4(b). The Section/Intake's Page

5. DISCUSSION AND CONCLUSION

The complexities of issues and some aspects of the scheduling system's elements have been identified, which are constraints on redundant and multiple programs by creating a semester sectioning function based on the credit hours of subjects a lecturer teaches. Some research in scheduling systems also focuses on the algorithms used to improve scheduling processes. Compared to the existing and commercialised scheduling system, there are still limited features in implementing the SPACESCHEDULER.

Therefore, customisation of required elements was developed to improve from a manual to an online scheduling system to manage multiple programmes easily. Thus, the system demonstrated here provides a better solution to SPACE's academic scheduling system problems and constraints. The system meets the basic general requirements of a scheduling system, including a user-friendly and responsive user interface and a variety of data stored, resulting in a fully automated solution that can function in different semesters and adds task weight elements to view performance and avoid an unbalanced distribution of teaching hours among lecturers.

6. FUTURE WORKS

Based on descriptive reviews related to previous studies, improvements to the SPACESCHEDULER system can still be developed. SPACESCHEDULER can be upgraded into an auto-responsive scheduling system that can be used through various gadgets. In addition, SPACESCHEDULER can be applied to have a broad scope of features and improve the system to be comparable to existing ones that have been commercialised. The SPACESCHEDULER scheduling system can also be improved in terms of security features. The login system is integrated with various security features in line with the circulation of technology to enhance the security rate of the information involved**.**

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KNOWLEDGE AND HYGIENE PRACTICES AMONG SMALL FOOD BUSINESSES LEAD TO BUSINESS SUSTAINABILITY.

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ABSTRACT - Food is needed by human in order to sustain their life, however, food also can be harmful to human by causing various problems such as food poisoning. Food safety and hygiene issues are currently as much of a worldwide concern as these issues may cause in the increasing of foodborne illness (FBD) which will lead to death without any prior prevention. This study aims to identify the knowledge and hygiene practices among small food businesses which later will lead to business sustainability. This article is written based on the readings obtained through online journals and articles. The results of the data analysed showed that the majority of mean values reach at medium level which showed that respondents not really understood the concept of food safety. However, there are a minority of respondents who ignore the food safety aspects that will be discussed later. This paper helps to increase the knowledge among food entrepreneur especially in reducing food poisoning cases involving food and beverages industry. The findings also can be a useful resource for consumers, food handlers, entrepreneurs and students in ensuring food safety. Thus, every individual needs to strengthen their knowledge about food safety before engaging in the world of food -based business to avoid any cross contamination in the future. In conclusion, the researcher has made some suggestions for improvement to increase and provide awareness to food handlers, consumers and further research suggestions.

Keyword: Food safety, foodborne illness, hygiene issues, food contamination, business

1. INTRODUCTION

A report by the World Health Organization (Disease et al., 2015) food poisoning occurs annually in showing about two million incurable cases. However, food poisoning or food contamination occurs due to the use of unclean water during food cleaning and processing, the use of agricultural chemicals during food production, insufficient food storage infrastructure, and inadequate improper regulation of the regulatory standards. All these factors contribute towards poor food safety. It is well informed that the food and beverages industry is a huge sector which includes eateries, food hawkers, canteens and so on. For example, food hawkers are the one that needs to be highlighted as they are selling food in an open air or environment.

Furthermore, according to the authors Wah, Thong, Behnke, Lewis and Siti Nursheena (2016) stressed that kitchen care after cooking is important and should be given attention in order to reduce bacterial reproduction. In other words, food handler should pay attention to many aspects of personal hygiene, food sources and food preparation areas.

The issue of food safety is a crucial and worrying issue as it can be a health problem for Malaysians and tourists. The issue of food safety is likely to be related with foodborne illness. However, serious concerns about street food safety issues have increased because most of the vendors in the business are poor, uneducated and have little or no regard for food safety (Samapundo et al., 2015). Food is main source energy for human but poor handling in preparation, food also can be poisonous and cause harm to life. According to the researchers, food-borne contamination often occurs due to careless handling of unsafe food (Awang & Abas, 2020). Therefore, the Malaysian government has established several regulations regarding food safety and quality acts. According to the regulations of the Food Act 1983, Food Handler Training is the foundation of exposure to food hygiene and safety that should be participated by food regulators. This is also supported by Kamal et al., (2015), with the training of food handling it can increase knowledge and the food operators need to adhere to the practice so that they can provide food in a clean and safe manner.

According to Legesse et al., (2017) food handlers are responsible in ensuring food safety from all aspects that includes preparing, storing, and serving food. Accordingly, the level of knowledge and hygiene practices are the best ways to prevent food from the threat of contamination. This is because the entrepreneurs and sellers are the people who take responsibility for every sale of food and drink provided to the public. In 2005, the nation of Small and Medium Enterprises (SMEs) has been introduced and was used across ministries, agencies, financial institutions and SME regulators. The existence of SMEs has become the backbone of economic growth and industrial development of the country. In addition, progressive countries have made this sector as one of the career choices among the younger generation and youth (Norasmah & Sumathy, 2012). Successful young entrepreneurs are not only creating new businesses, but they also have provided job opportunities, helped the needs of the community and so on. The objectives of this article are to give information to food handler concerning on: Knowledge and hygiene practices among small food businesses and Knowledge and hygiene practices among small food businesses can lead to business sustainability.

2. MATERIALS AND METHODS

The researcher has acquired data and information from previous literature which includes online journal and article. Besides,the researcher uses meta-analysis methods because are more reliable. The researcher conducted a comprehensive search on the several databases such as Universiti Teknologi Malaysia (UTM) library database, Google Scholar, Scopus, and Science Direct. The literature searches initially yielded a pool of 30 papers, however not all 30 paper were appropriate for inclusion in our meta-analysis. The researcher used different combination of search term related to: food safety, street food, small business, SME, economy development, and food hawker. The study has been conducted through reading material, separation of data and information by categorizing the data to several subheadings. The selected journal and article cover publications ranging from 2008 to 2020. The journal and article also are taken among the local researchers as well as abroad. Table 1 describes the formulation of meta –analysis.

Table 1. Summary of reviewed articles

Authors	**Study Objective**	**Methodology**	**Participant**	**Findings**
Pang & Toh, 2008	This study determines the socio-demographic factors that influence food safety knowledge / practices and the effectiveness of hawker food safety strategies in the city and less urban environment in Malaysia	Quantitative study	Hawker	• Socio-demographic factors affecting food safety knowledge/practice • Effectiveness of food safety strategies – food safety regulations/guidelines
Awang & Abas, 2020	This study aimed to examine the level of cleanliness on food premises; assess the level of knowledge, attitudes and practices of relevant food handler's food safety as	Quantitative study	Food handlers from licensed food premises	Food handlers demonstrated good knowledge, positive attitudes and excellent practices in food safety. However, some food handlers still lack basic knowledge of food hygiene,

	well as identifying relationships between knowledge, attitudes and practices.			especially regarding food heating and control safe temperature for cooked food.
Kamal et al., 2015	The main purpose of this study was to assess the level of knowledge and practice of food handlers on food safety and hygiene in addition to testing for the presence of staphylococcus aureus on the palms of food handlers.	Quantitative and experimental study	The food handlers involved are from all over around the Sekolah Menegah Sains in Johor.	Studies also show socio-demographic factors food handlers such as age, gender, and academic education did not influence the level of food handling knowledge and practices
Legesse et al., 2017	To assess food handling practices and related factors among food handlers in the city of Arba Minch Public food organization in 2015.	Qualitative study	Food handlers working in public food services.	• Current studies indicate that relatively low food handling practices are observed. • Low practice is seen in wearing clean gowns and head coverings, clean nails and medicine screening.

Sharif, Obaidat, & Al-Dalalah, 2013	This study aims to determine whether the knowledge, attitudes and practices of food handlers in a military hospital in Jordan	Quantitative study	Military employees and civilian employee	A food handler at a military hospital showed a high level of knowledge, positive attitudes and good practices in food safety
Mohamad et al., 2015	This study discusses food safety issues from the perspective of Islamic law by focusing on the consumption of high-risk foods to humans	Library research	The relationship between halal tayyiban and food safety.	This study found that consuming risky foods can be categorized in different rulings (hukm) that can affect a person's health condition.
Asri, M., & Ghani, A. (2012	This study aims to identify the factors driving the transformation among Malay entrepreneurs in Johor Bahru from their original job to business.	Quantitative study	500 small and medium entrepreneurs around the area Johor Bahru in various sectors	The results of the study generally show that self - initiative, family motivation and religion are the main factors that motivate them to venture into entrepreneurship while personal background,

				business management skills, networking skills and institutional/government support are significant factors influencing business performance.
Ab Rahman Ilyia et al. 2011	This study investigates the factors of non-compliance among the restaurant operator towards Trade Description Order 1975 (Use of Halal Expression) using the Theory of Planned Behavior (TPB)	Quantitative study	350 restaurant owners around Kuala Lumpur but only three were found to have obvious problems namely lack of knowledge, supplier issues and governance issues	Findings indicate that attitudes and behavioural controls have a significant relationship with noncompliance behaviour but non -compliant behaviour has no significant relationship with subjective norms

3. RESULTS AND DISCUSSION

Researcher has found that there are two factors of knowledge and hygiene practices involving the small food businesses. Besides, knowledge and hygiene practices acquired by the small food businesses can boost economy in Malaysia.

3.1 Knowledge and hygiene practices among small food businesses

Socio-demographic factors affecting food safety knowledge/practice especially during food processing. Surprisingly, there are also some of food handlers who lack of knowledge about the proper method of thawing frozen food. This is because 90% of food handlers think that the correct method to thaw frozen meat and poultry is to let it outside overnight at room temperature (Sharif, Obaidat, & Al-Dalalah, 2013). According to statistics from the MOH, cases of food poisoning in Malaysia are mostly due to the preparation of unclean food (MOH, 2016). Based on this study, stated that food security is closely linked to human health and safety besides bringing national economic development, harmony and social stability.
The cause of food safety problems can be identified into three main reasons which are, contamination caused by microorganisms such as germs and bacteria, the use of chemicals in the manufacture and processing of food as well as physical contamination such as dirt and dust. The presence of microorganisms such as Salmonella, Escherichia, Coli, and Vibro choler may also be the cause of food contamination (Zhu, Y, .2013). Therefore, hygiene practices by the food handlers can demonstrated good knowledge, positive attitudes and excellent practices in food safety. Thus,food contamination can be avoided. Furthermore, Mohamad et al., (2015) stressed that the use of plastic gloves can ensure that the food served is not contaminated.

According to Kamal et. al. (2015), in Food Act 1983 (Act 281) every food handler who sells food regardless a ready-to-eat food or raw materials should undergo Food Handler Training Certificate (SLPM), otherwise it could be an offense to the food premises. In addition, for dishwashing procedure it is compulsory to use

antibacterial soap to wash and hot water for rinsing and cleaning. To ensure cleanliness of cooking utensils. Improper arrangement of boxes that do not comply the labels and expiration dates, use of unsafe ingredients and unclean water supply are also among the contributing factors to food poisoning. Recommendations from MOH (2021), suggest that raw or processed materials should be segregate for business and home used. Besides, FIFO practice methods for previously purchased canned and dried food products should be used before purchasing new items (Osaili, 2013). Moreover, according to Terpstra et al., 2005 the optimum temperature range for canned dried products, is between 10-21 ° C. Avoid keeping it above 38 °C storage temperature as it may cause the canned food loss of consistency and spoiled. If this is not controlled, foodborne diseases will occur as one of the factors that lead to the spread of foodborne diseases is the improper storage of food. If food handlers adopt an attitude of food safety and individual hygiene while preparing food, food contamination can be reduced (Sulaiman,2016).

3.2 Knowledge and hygiene practices among small food businesses can lead to business sustainability.

Malaysia is a rapidly developing country, myriad of local entrepreneurs have emerged along the way that includes SMEs. SMEs in the food and beverage industry are widely noticeable in almost all urban and rural places. This can be perceived through the sale of lunch or dinner for snacks, fruit juice or tea that are available at the selected area.
In addition, the existence of SMEs can help in a fairer distribution of income, minimize the country dependency on imported goods as well as to save foreign exchange (Asri & Ghani, 2012). SMEs that practice the concept of food hygiene and safety can attract many Muslim tourists from all over the world to come to Malaysia (Ab Rahman Ilyia et al. 2011; Syed Marzuki et al. 2012). The food and beverage industry in Malaysia often makes a significant contribution to the country economy. Food and beverage industry has provided opportunities for jobs on a smaller scale (Development & Board, 2017). According to UNIDO, (United Nations Industrial Development Organization, 2021) food security is important to human health and at the same time it is a major contributor to the development of the agricultural sector among food security to consumers. Besides, a safe product is a fundamental thing in the concept of food trading.

As mentioned by Radin Firdaus et al., (2015), the impact of the food supply crisis that hit the world in 2008 government policies in Asian countries have been the main focus to strengthen assurance on food security. Furthermore, food safety is crucial and needs to be practiced properly among food handlers around the world. This is to ensure an adequate food supply at an affordable price received by the population. Indirectly there will be no harmful effects caused by the problem of hunger and malnutrition such as theft, robbery, riots and so on (Anthony et al.1982). The issue of consumer protection and empowerment is a major agenda in Malaysia by the Consumerism Movement (Fomca, 2013). According to Suraiya and Ahmad Raflis (2011), a legitimate social responsibility for business entities is also being discussed thoroughly in the high value social responsibility model. High value social responsibility can be linked between wealth creation to business owners by doing the right actions and conducting them in the right way. The implementation of social responsibility can have a high impact which enables the community to experience the benefit in the form of improved quality of life such as offering high quality and safe products, diversity of product in the market and environmental conservation. Other than that, business entities can provide benefits in the form of increased sales and maximum profits.

4. CONCLUSION

In conclusion, food safety issue can be discussed on the subject of knowledge and hygiene practices among food handlers who owned small-scale businesses which later will give a huge impact on the economy. It

can be portrayed that, through good food safety practices by food handlers will gain more buyer to increase sale and initiate better growth of economy. So, government would use less energy and cost control the spread of foodborne illness and development of its medication.

Besides, society who can live actively are able to perform various activities such as to increase individual income while contributing to the country economy. Aspects of quality, hygiene, safety and health throughout the process of preparing and selling food must be emphasized by all SMEs in the Malaysian food industry. Each of these elements is required for the purpose of ensuring and guaranteeing the production of food products that are clean, and safe to consume by the public.

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WORKABILITY ELEMENTS OF POST- DIPLOMA STUDENTS IN CONSTRUCTION TECHNOLOGY FROM VOCATIONAL COLLEGES IN MALAYSIA

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ABSTRACT – A new vocational education system through the Vocational College Standard Curriculum (KSKV) can contribute to Malaysia's transformation agenda as a high -income country. Most industries in Malaysia also need skills to complete a task without having to attend additional courses as they already have recognition from the Department of Skills Development, Ministry of Human Resources Malaysia. Among the aspects covered in KSKV are academic skills, self-management skills, and team skills. However, the aspect of workability is not clearly stated in Vocational Colleges to attract students to learn skills and to attract students' interest in learning skills and improve their perspectives on employment upon graduate. Therefore, this study was conducted to identify the workability skills elements for Construction Technology courses in Vocational Colleges. This study was conducted to explore the elements of skills required in the construction industry with qualitative method of document analysis and followed by semi-structured interviews with six respondents: two representatives each from instructors of Construction Technology courses in Vocational Colleges, industrial employers from government sector and industrial employers from private sectors, respectively. The study was then continued with quantitative approach of a survey using a set of questionnaires given to three respondents consisting of subject-matter experts, Construction Technology program coordinators in Vocational Colleges, and construction industry employers to confirm the elements of workability skills acquired through the previously conducted interviews. From the qualitative data analyzed, five workability domains consisting of communication skills, technology use skills, information management, selecting and analyzing skills, cultural understanding skills, and technical skills were identified and listed in the form of workability elements table in the construction industry. Qualitative data were then used to generate a validation instrument that was evaluated using kappa statistics. It is hoped that the findings of the study will be used as a guide to improve the implementation of employability skills and the teaching and learning process in Vocational Colleges in Academic and Vocational Modules.

Keywords: workability, vocational college graduates, construction industry

1. INTRODUCTION

Technical and Vocational Education and Training (TVET) is an aspect of the educational process that involves the production of technological skills, attitudes, and information relevant to parties in various sectors of economic and social life as well as general education including technological and science-related research (UNESCO dan ILO, 2001). However, TVET is often placed as a second option that only qualifies in terms of academic achievement for individuals who are less fortunate in the academic field in ordinary secondary schools (Razali Ibrahim, 2017). The stigma is obsolete as employers nowadays pay more attention to TVET program graduates. Plus, TVET is one of the key drivers of the Eleventh Malaysia Initiative to make Malaysia a high-income country and envisions its goal of achieving developed country status (Kementerian Pengajian Tinggi, 2017). The Malaysia Education Blueprint 2015-2025 has laid the foundation for TVET to find a place in education that offers attractive employment opportunities and career options and opportunities for further studies. The transformation of TVET Malaysia is expected to enable TVET graduates to meet the demands of the industry and contribute to the development of the Malaysian economy.

Unfortunately, not all parents or guardians understand the advantages of taking TVET courses at these Vocational Colleges as they are influenced by society's view of their children, and the future is thought to be dark because of their association in college. As a result, the interests of these students are not considered by their guardians and will be one of the reasons for the change in their attitudes and future. Razali Ibrahim (2017) argues that the mentality of parents and students who often consider TVET as a second-class field of study needs to be changed. He also opined that such thinking could jeopardize the government's efforts to employ skilled manpower in the field of TVET in the future. This statement supports that the stigma and negative perception of society towards graduates of Vocational Colleges and Training Institutes where they will earn low salaries when obtaining a job in their field indeed needs to be changed. Furthermore, these TVET graduates are also recognized with Sijil Kemahiran Malaysia (SKM) Level 3 which is an added value to their existing skills as proof that they are indeed capable and skilled in the field in which they are engaged. Therefore, parents and students need to change the perception of the field of TVET as a second-class education (Berita Harian, 2017).

In summary, there are still individuals and community groups who do not believe in the benefits if their children enter skills institutes such as the Industrial Training Institute, Giat MARA, and Vocational Colleges in particular. They underestimate the ability of the skills offered in such skills education institutes.

Negative attitudes and perceptions towards vocational students as academic failures are still hard to erode in society. As a result, their child's future is not shaped properly. In addition, there are still those who still do not want to send their children to Vocational Colleges because they are weak in the academic field. This will cause their children to be pressured to study academically in line with the wishes of their parents so that their actual desires and interests are ignored. There are still those who do not know that graduates with these skills can earn high salaries if they are given the opportunity. Furthermore, society is unaware of the actual level of employability of these graduates if they compete in the industry. This study will identify the workability elements of Vocational College graduates in the industry today so that more highly skilled youths can be born. In addition, this study was conducted to open the eyes of the community about the advantages and real skills possessed by students.

2. MATERIALS AND METHODS

For this study, the researchers used a mixed method design that started with a qualitative study with interview methods and document review and was followed by a quantitative study with a validation form to obtain the required data and information. At an early stage, the Vocational College Standard Curriculum (KSKV) is referred to list the skills found in the Vocational College students' curriculum. In this way, researchers can obtain a list of skills of Vocational College students during the 4 years of study to obtain the Malaysian Vocational Diploma (DVM). As an added value to the skills of students from Vocational College, a total of 5 lecturers of Construction Technology courses from various Vocational Colleges and 6 employers from the construction industry were interviewed to align the skills of KSKV with those needed in the industry. The results of these two processes will assist in exploring the domain and identifying the employability elements involved in the research. Next, the results of the qualitative study were used to produce a questionnaire instrument in the form of validation. This was used to determine the validity of the elements obtained from previous studies by 6 experts, consisting of TVET lecturers, heads of the programme, and construction company owners involved in the process of verification of workability elements in the field of construction. The experts must have extensive experience in the field of construction, including in research, education, or business. The Nvivo 11 software was used in this study to analyse the interviews conducted in the qualitative study, while the content validity ratio through kappa statistics was used in confirming the employability elements obtained.

3. RESULTS AND DISCUSSION

3.1. What Are the Elements of Workability Skills for Construction Technology Courses in Vocational Colleges?

This study only focuses on five elements of workability skills namely communication skills; using technology skills; managing, selecting, and analysing information skills; cultural understanding skills; and technical skills. This is because these skills are the choice of documents and reference books that have been analyzed. Among them are Muhammad Hazrul Ismail (2012); Pramela Krish, et al (2012); Noorasiah Sulaiman & Nursaliha Abd Ghafar (2019); Maniam & Liong (2007); Shaharuddin Ahmad (2014); Sarimah Che Hassan, Norlizah Che Hassan & Nor Aisyah Buang (2010); Adi Irfan Che Ani (2014); Norazila Mat (2015) and Technical and Vocational Education Division (2017). These documents and reference books are used in the highlighting process to explore the domains of workability in the construction industry.

3.2. What Are the Elements of Skills Required in the Construction Industry?

At this stage, the workability elements that have been identified through document analysis and interviews conducted are transferred into the list of workability elements for Construction Technology graduates to pursue a profession in the construction industry. Then, a list of workability elements for the Construction Technology course is produced. The resulting list shows each element category relationship along with the five elements of workability in the construction industry.

Table 1: List of Workability Elements in the Construction Industry

<table>
<tr><th colspan="4">ELEMENTS OF THE WORKABILITY OF THE CONSTRUCTION INDUSTRY</th></tr>
<tr><td colspan="4">Communication Skills
Communication that needs to be mastered:</td></tr>
<tr><td colspan="2">Verbal communication</td><td colspan="2">Language usage</td></tr>
<tr><td colspan="4">Using Technology Skills
Applications that need to be mastered:</td></tr>
<tr><td>AutoCAD</td><td>Sketch Up</td><td>IBS</td><td>BIM</td></tr>
<tr><td>WBS</td><td>MS Word</td><td>MS Excel</td><td>MS Powerpoint</td></tr>
<tr><td colspan="4">Managing, Selecting, and Analyzing Information Skills
Information to know:</td></tr>
<tr><td>Plan</td><td>Paperwork</td><td>Report</td><td>Tender document</td></tr>
<tr><td colspan="4">Documented instruction</td></tr>
<tr><td colspan="4">Cultural Understanding Skills
The culture that needs to be practiced:</td></tr>
<tr><td>Punctuality</td><td>Time-division</td><td>Responsibility</td><td>Work culture</td></tr>
<tr><td colspan="4">Technical Skills
The technicality that needs to be mastered:</td></tr>
<tr><td>Read the plan</td><td>Make paperwork and reports</td><td>Know the scope of the job task</td><td>Fill out a quote</td></tr>
<tr><td colspan="4">Receive and give instructions</td></tr>
</table>

4. CONCLUSION

The research conducted is about the exposure to the workability elements of Vocational College diploma graduates in the construction industry. Several theories state several reasons that are the cause of the lack of employment of these diploma graduates after they graduate from Vocational Colleges. The mismatch between supply and demand in the graduate labour market results in many issues not only related to the role of higher education institutions and their study plans, but also in terms of the quality of the graduates born. The difficulty of finding a job is said to be that graduate unemployment is closely linked to the lack of workability skills and the marketability of graduates entering the labour market (Nooriah Yusof, Zakiah Jamaluddin dan Norain Mat Lazim 2013). Therefore, this study has identified several elements of workability skills that are important to be mastered, known, and practiced by students and graduates of Vocational Colleges especially in the field of Construction Technology. The elements of workability skills in the construction industry that are mentioned can be used as a reference for the parties involved in this industry. The mastery of these skills is very important for Vocational College graduates to stand out to be accepted to work in the field of construction.

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USING SCHOOL OF PROFESSIONAL AND CONTINUING EDUCATION WEBSITE TO INVESTIGATE USABILITY

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ABSTRACT - Website has becomes an important tool for communication channel between organization and their users/customers. Websites can reach users nationally and internationally by providing information, promoting and marketing the organizations' products and services and allowing interaction with the users. Nevertheless, these functions would be meaningless if the users cannot use it easily, effectively and emotionally satisfying. Usability can be summarized as a system which is easy to learn with supporting materials, easy to use without any extra time to familiar with the environment, help accomplish the dedicated task, user friendly towards errors being made and lastly, user likes to use it. By executing the tasks mentioned above, usability will be achieved. Users will increase their productivity and efficiently if they can simply find the content that is organised in a way that allows for easy access, navigation and presented in a well-structured layout. In a nutshell, the usability of the websites determines whether or not they are accepted by users. With regards to SPACE website as an educational website, it is important to know whether the website is usable in the eyes of the users. When the user can easily find an information from the website, it means that the user productivity is high due of high usability. Therefore, this study aims to measure the perceived usability of the SPACE website from the standpoint of a potential user from secondary school student using System Usability Scale (SUS) instrument. The finding shows that the level of usability for SPACE website are acceptable and positive although the findings are below the average score.

Keywords: Website; User Interface; Usability; System Usability Scale (SUS)

1. INTRODUCTION

A faculty or university website is one of the most useful sources of information to communicate academic and non-academic matters such as admissions procedures, list of academicians and programs offered, library and accommodation facilities for prospective students to pursue their undergraduate and postgraduate study.

Therefore, a faculty or university website is significantly important to achieve a well-accepted usability (efficient, user-friendly and satisfaction) level by prospective students and public.

School of Professional and Continuing Education (SPACE) is one of faculties in University Technology Malaysia. It was established in 1992 and was rebranded in 2006 as a faculty to offer lifelong academic as well as professional development programmes to the public. In June 2010, UTMSPACE was restructured in line with UTM upgraded as a research university. Due to rebranding and upgrading of UTMSPACE, there have been a lot of academic information updated which is important to be informed to prospective students and public. Therefore, what better way to inform them other than an efficient and user-friendly faculty website. SPACE websites have been visited by students of diverse backgrounds irrespective of their age, gender, geographical location and diverse personalities and upbringings. Their interactions with the websites in terms of usability are unknown. It is very important for the students to obtain the right information easily, efficiently and with satisfaction while and after navigating the

website. Therefore, this research is important to determine the usability of the SPACE website among prospective students.

Websites should fulfil the standard quality in terms of its functional and non-functional properties [1]. Usability is one of the most important non-functional criteria of website quality [2]. It is the process of interacting with the website, how user's response relates to the characteristics of the user interface website design. User will easily learn to use with minimum time needed and easily use to perform the task and job. It is about task oriented where it deals with efficiency and effectiveness. Usability will increase user productivity when the user can manage to perform the task faster since it is learnable and user friendly. The term usability is also more or less the same meaning with user friendly.

The success or failure of a website is determined by the user's ability to navigate around it without difficulty. It is also crucial to be able to work comfortably and for lengthy periods of time on a site. It should be simple to navigate and find content [3]. A website is considered as "good" based on its functions such as providing information, helping to accomplish a dedicated task, to serve as a source of entertainment, or even to provide a platform for social communication; to name a few. Nevertheless, those features would be meaningless functions if they fail to consider one vital aspect, usability. Usability is when the user can easily learn to surf and navigate the websites, use it without any difficulties and perform the task effectively. In arrange to attain what is considered as a good system, the finest arrangement is by centering, on the user.

Nowadays, computer user varies in knowledge, culture, location and others, client factor consideration is critical when designing the user interface particularly where one framework will be utilized and suitable by numerous users.

Researcher [4] defined usability as "a quality attribute that assesses how easy user interfaces are to use. Usability was defined by five quality components: learning ability, efficiency, ability to remember, errors and satisfaction". Usability can be summarized as a system which is easy to learn with supporting materials, easy to use without any extra time to familiar with the environment, help accomplish the dedicated task, user friendly towards errors being made and lastly, user likes to use it. By executing the tasks mentioned above, usability will be achieved. Usability is still considered as one of the critical factors and actively being research by Human Computer Interaction (HCI) researchers [5] [6]. At best, a system with poor usability will cost its users time and effort; at worst, it will not be used at all, and its functions may be removed because their utility has not been demonstrated.

This study examines the perceived usability of SPACE website in the eye of the user. Secondary school students were selected since they will become the potential student of Space after finishing their SPM examination. Furthermore, they are the suitable candidates to examine their perceived usability of the Space website. There are a few methods/instruments available to measure the perceived usability such as System Usability Scale (SUS), Questionnaire for User Interface Satisfaction (QUIS) and others. However, System Usability Score (SUS) is selected since it is reliable and widely used by HCI researchers.

2. MATERIALS AND METHODS

This study used SPACE website (http://space.utm.my) as a platform for the usability study. The subjects were 20 form 4 and 5 secondary school students of Malay, Chinese and Indian races. Four schools were selected based on the location convenient for data collection. A control experiment will be conducted to test on website usability. The experiment will be divided into 3 sections. Section A is to obtain user demographics such as gender, age, education level, race, years of using the internet and frequent surfing the SPACE website. Section B is to get information on the website. The subject will be asked to find 6 information from the website. The information seeking questions will be constructed so that the

information will be available on page 1, 2 and 3 on the website. The objective of asking the participants to find the information in all the pages on the website is to persuade them to browse all the pages on the website.

The subjects need to clock down the time taken to find each of the information. For section C, the subjects are asked to answer a set of questions on the perceived usability based on the selected instrument.

There are various instruments to measure usability such as QUIS (Questionnaire for User Interface Satisfaction (1988)), ASQ (After-Scenario Questionnaire (1991)), SUMI (Software Usability Measurement Inventory (1993)), PSSUQ (Post-Study System Usability Questionnaire (1995)), SUS (System Usability Scale (1996)), PUTQ (Purdue Usability Testing Questionnaire (1997)), WAMMI (Web Analysis and Measurement Inventory (1998)), IsoMetrics (1999)) and UMUX (Usability Metrics for User Experience (2010)) [7]. This study used SUS (System Usability Scale), introduced by John Brooke. It is a set of ten (10) items, using a 5 point Likert scale from strongly disagree (1) to strong agree (5). Table one (1) lists the SUS questionnaire items. It is one of the most commonly used questionnaires for assessing perceived usability [8]. It allows the researchers to swiftly and simply determine a system's usability. This research replaced the term ‘system’ in the original SUS questionnaire with ‘website’. This research also provided another set of questionnaire in Malay language. Table 2 is SUS’s Malay version used in this study. follows.

Table 1: SUS Questionnaire Items

No	Items
1	I think that I would like to use this system frequently
2	I found the system unnecessarily complex
3	I thought the system was easy to use
4	I think that I would need the support of a technical person to be able to use this system
5	I found that the various functions in this system were well integrated
6	I thought there was too much inconsistency in this system
7	I would imagine that most people would learn to use this system very quickly
8	I found the system very cumbersome to use
9	I felt very confident using the system
10	I needed to learn a lot of things before I could get going with this system

Table 1: SUS's Malay Version

No	Items
1	Saya merasakan ingin menggunakan laman web ini
2	Saya merasakan laman web ini tidak semestinya kompleks
3	Saya merasan laman web ini senang digunakan
4	Saya merasakan perlu sokongan orang teknikal untuk dapat menggunakan laman web ini
5	Saya mendapati pelbagai fungsi di laman web ini digabungkan dengan baik
6	Saya merasakan ada terlalu banyak ketidakseragaman dalam laman web ini
7	Saya membayangkan kebanyakan orang akan mempelajari laman web ini dengan cepat
8	Saya merasakan laman web ini sangat sukar untuk digunakan
9	Saya merasa sangat yakin menggunakan laman web ini
10	Saya perlu belajar banyak perkara sebelum saya dapat menggunakan laman web ini

Each item was given a score of 1 for 'strongly disagree' and 5 for 'strongly agree'. For the SUS questionnaires, SUS score needs to be calculated first, the formula is:

1) Sum the rating score from each item
2) Items no 1,3,5,7 and 9, the contribution is 1 minus the scale position.
3) Items no 2,4,6,8 and 10, the contribution is 5 minus the scale position.
4) Multiply the sum of the scores by 2.5 to obtain the overall value of SUS.

The result of SUS is a single score from 0 to 100 where 100 is the highest and 0 is the lowest. SPSS and Microsoft Excel were used to analyse the data.

3. RESULTS AND DISCUSSION

A pilot test was conducted using 5 subjects whereby 4 of them were female and one was male. Their age range was between 17 and 41 years old. They were asked to answer the survey questionnaire. Table 3 lists the gender, age, completed time and the SUS score for all the subjects. The results showed that all the subjects need not more than 20 minutes to complete this experiment. For SUS score, all subjects except one scored above 70. This means SUS score above 68 would be considered as above average.

Table 3: Gender, Age, Completing Time and SUS's Score For Pilot Test

Gender	Male	23	39
	Female	36	61
Race	Malay	20	33.3
	Chinese	20	33.3
	Indian	19	33.3
Years Of Internet Experience	1-5 Years	10	17
	65-10 Years	22	37
	> = 10 Years	27	45
University Website Surfing Frequency	Always	8	14
	Often	15	25
	Rarely	23	38
	Never	13	23
TOTAL		**59**	**100.0**

Subject	Gender	Age	Time	Sus Score
Subject1	Female	17	19 minutes 12 seconds	70.00
Subject2	Female	19	4 minutes 51 seconds	97.50
Subject3	Female	21	13 minutes 43 seconds	62.50
Subject4	Female	29	8 minutes 10 seconds	80.00
Subject5	Male	41	8 minutes 9 seconds	82.50

Reliability test using Cronbach's Alpha was used to check on the reliability of the instrument. Cronbach's alpha is a reliability coefficient that gauges a set of items' internal consistency. Higher values of alpha which is more than 0.7 is required in order to be considered as reliable [9]. Table 4 shows that research instrument scores more than 0.7 and this means all items are reliable and acceptable.

Table 4. Cronbach's Alpha Score

Instrument Item	Cronbach Alpha	N Of Items
SUS	0.729	10

Table 5 shows the demographics profile of the subjects. The survey was conducted on 60 secondary school students from four schools that are SMK Segambut, SMK Datuk Lokman, SMK Jinjang and Chong Hwa. One subject was rejected since she did not fill in the SUS questionaire. 30% of them (18) were 16 years old, 63% (37) were 17 years old and lastly, 8% (4) were 18 years old. 39% (23) were male and another 61% (36) were female. All the subjects have experience using the Internet where 17% (10) have experience between 1-5 years, 38% (22) have experience of 6-10 years (26) and another 45% (27) have an experience of more than 10 years. 14% (8) of the subjects surf the university website at least once a week, 25% (15) surf it once a month, 38% (23) used it once a year and the balance (13) never suft the university website.

Table 5: The Demographic Profiles Of The Subjects

VARIABLES	CATOGERIES	FREQUENCY	PERCENTAGE (%)
Age	16 YEARS OLD	18	30
	17 YEARS OLD	37	62
	18 YEARS OLD	4	8

There are 10 questions in SUS questionnaire that are frequently used, complex, easy to use, technical support, well integrated, inconsistency, easy to learn, difficult to use, confident and learn a lot of things. The odd number for SUS question item is for positive value and the even number for negative values. Table 6 shows the means, standard deviation and the skewness scores for each SUS question items. The top three highest scores are easy to learn (3.63), well integrated (3.61) and easy to use (3.56) and the top lowest scores are difficult to use (2.58), inconsistency (2.85) and complex (2.95). Table 7 shows the distribution of subjects 'scores.

Table 6. Mean, Standard Deviation and The Skewness Scores

No	Items	Mean	SD	Skewness
1	Frequently	3.32	1.041	0.257
2	Complex	2.95	0.839	0.641
3	Easy to use	3.56	1.118	− 0. 422
4	Technical support	3.24	1.194	− 0. 164
5	Well integrated	3.61	0.965	− 0. 086
6	Inconsistency	2.85	0.997	0. 209
7	Easy to learn	3.63	1.032	− 0. 159
8	Difficult to use	2.58	1.206	0.455
9	Confident	3.37	1.049	0.024
10	Learn a lot of things	3.44	1.103	− 0. 323

Table 7: The Distribution Of Subjects' Scores.

No	Items	No				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Frequently	1	11	26	10	11
2	Complex	0	19	27	10	3
3	Easy to use	3	6	19	17	14
4	Technical support	5	11	18	15	10
5	Well integrated	1	4	25	16	13
6	Inconsistency	5	15	27	8	4
7	Easy to learn	2	2	28	11	16
8	Difficult to use	12	19	15	8	5
9	Confident	2	8	26	12	11
10	Learn a lot of things	3	8	19	18	11

Table 8. SUS's Mean Score

Item	SUS's Mean Score
Chinese	50.75
Indian	58.95
Malay	58.75
TOTAL	56.15

SUS is a global assessment of usability aspects (effectiveness, efficiency, and satisfaction) which subjectively experienced by the users. The SUS score can indicate the acceptability range of the users. The SUS mean score for all subjects is 56.15. It is acceptable and positive although it is below 68. If based on race, Indian subjects scores the highest (58.95%), Malay (58.75%) and lastly Chinese (50.75%). The score for all subjects was below average since 61% subject rarely and never browse the university website.

4. CONCLUSION

One of the most important elements to consider while designing a website is usability, as it will determine the user's acceptance. A high usability website will help a user learn to use it in less time, make it easier to find information, boost productivity, and produce a pleasant emotion, all of which will lead to user retention. Investing in usability research allows the company to uncover real problems that users confront, resulting in a positive vibe and increased customer retention The positive SUS score for this study indicates it is quite user friendly

but more study needs to be done to improve its usability for the secondary school students.

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